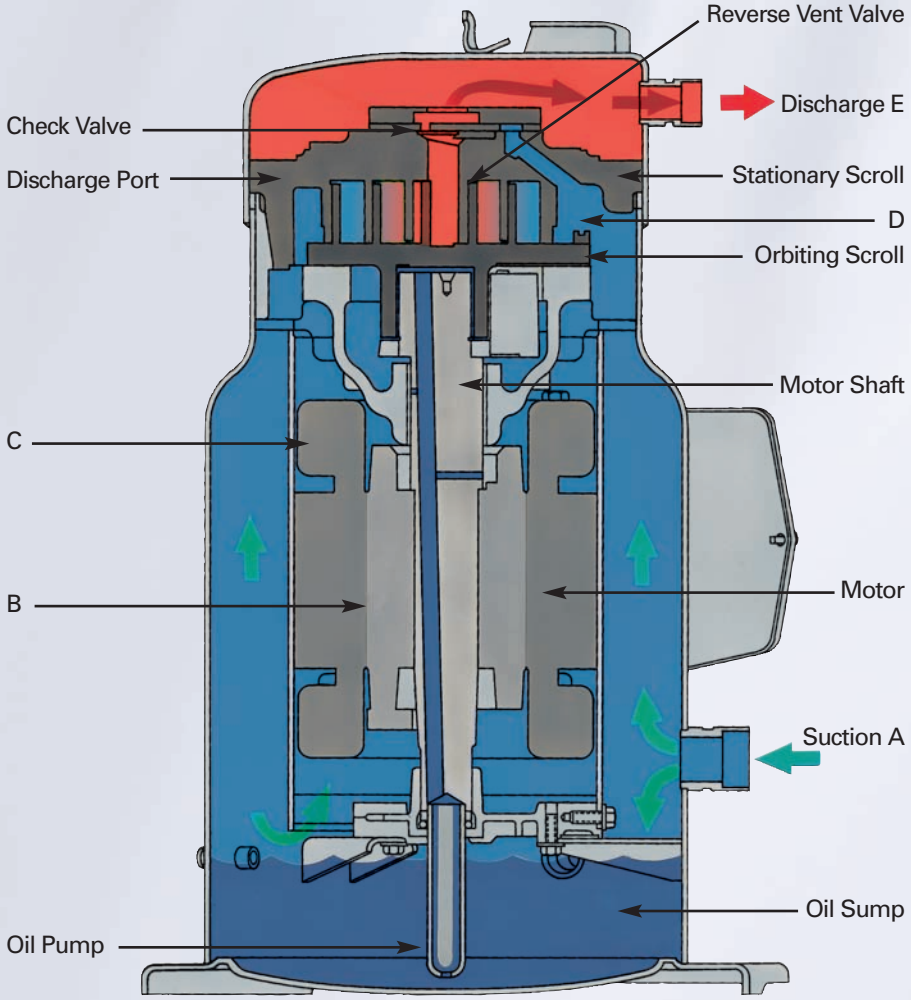
Trane 3-D® Scroll Compressor

The principles of operation: The suction gas is drawn into the compressor at A. The gas then passes through the gap between the rotor and stator, B, cooling the motor, C. The gas then enters the intake chamber, D, that encircles the scrolls. The oil in the suction gas is separated by changing directions and impinging on surfaces within the compressor and then draining back to the oil sump.

Finally, the suction gas is drawn into the scroll assembly where it is compressed and discharged into the dome of the compressor. The dome of this compressor acts as a hot gas muffler which dampens the pulsations before the gas enters the discharge line, E.



How the Scroll Compressor Works

General

A 3-D compressor has two scrolls. The top scroll is fixed and the bottom scroll orbits. Each scroll has walls in a spiral shape that intermesh.

Inlet - First Orbit

As the bottom scroll orbits, two refrigerant gas pockets are formed and enclosed.

Compression - Second Orbit

The refrigerant gas is compressed as the volume is reduced closer to the center of the scroll.

Discharge - Third Orbit

The gas is compressed further and discharged through a small port in the center of the fixed scroll.